

FORCE-BALANCED ROLLER-CONE BITS,  
SYSTEMS, DRILLING METHODS, AND  
DESIGN METHODS

Inventor: Shilin Chen  
Date Filed: January 26, 2004  
Attorney's Docket: 074263.0212 (SC-98-025 C3-C)  
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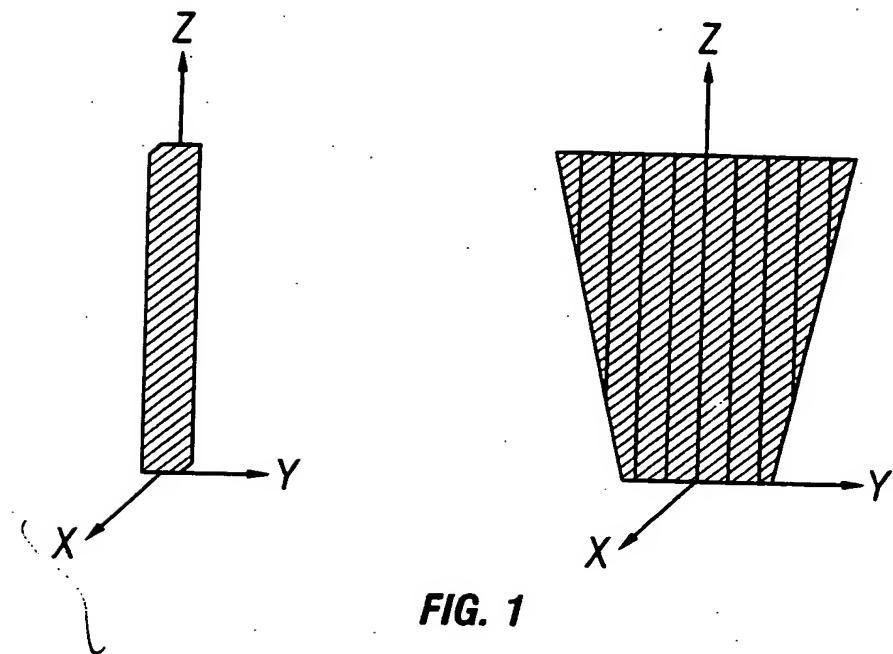


FIG. 1

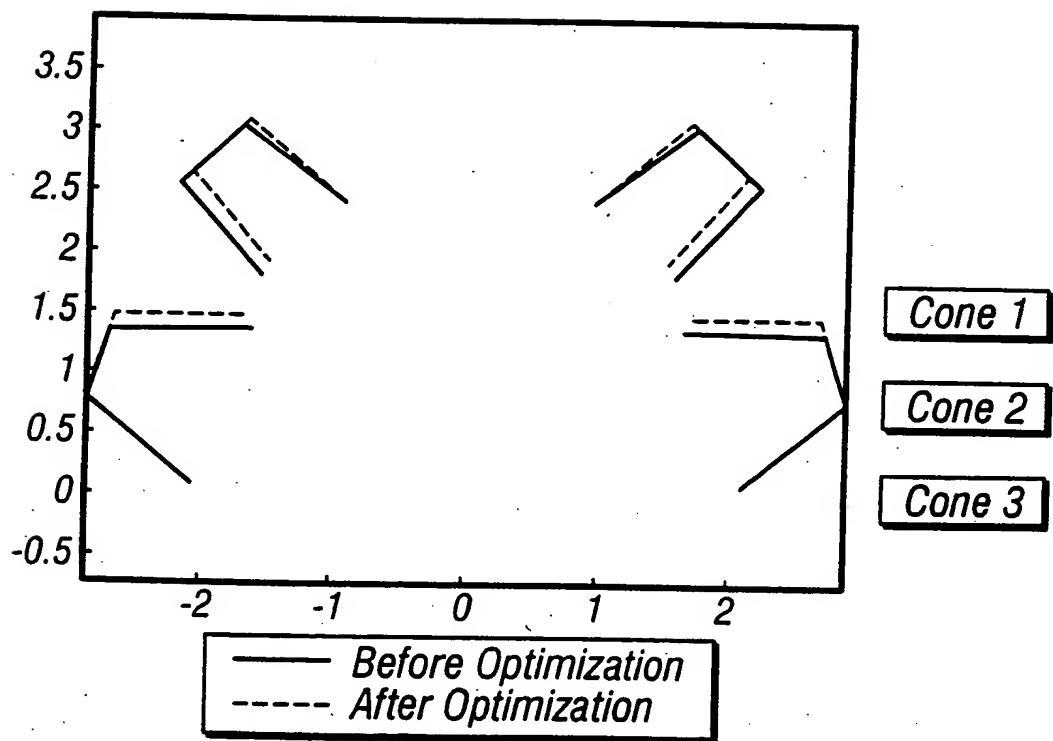
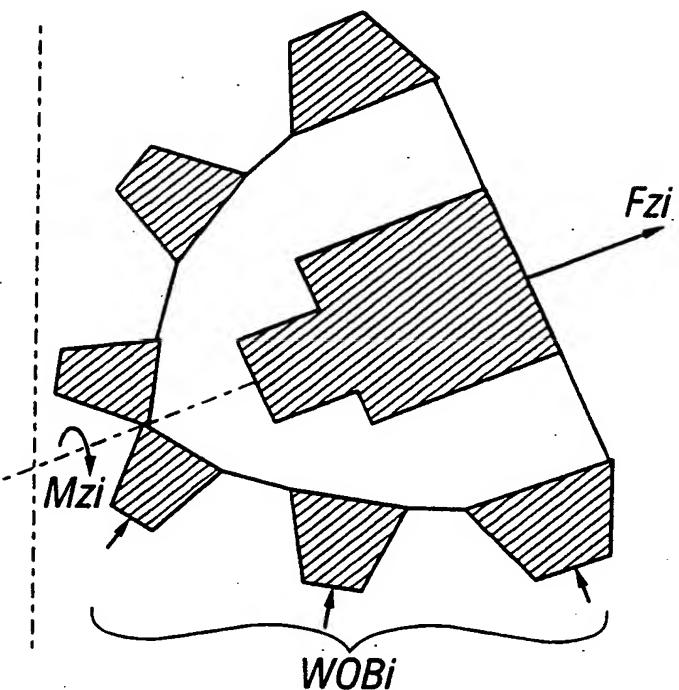


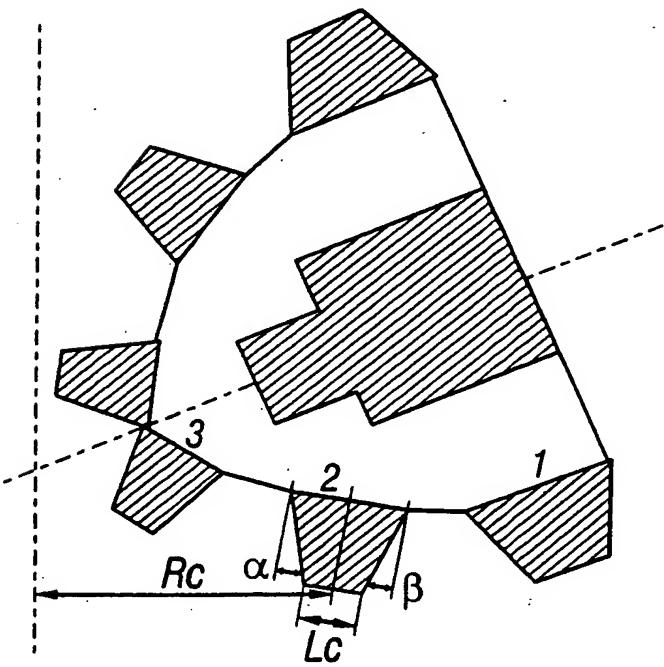
FIG. 7C

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**FIG. 2**



**FIG. 3**

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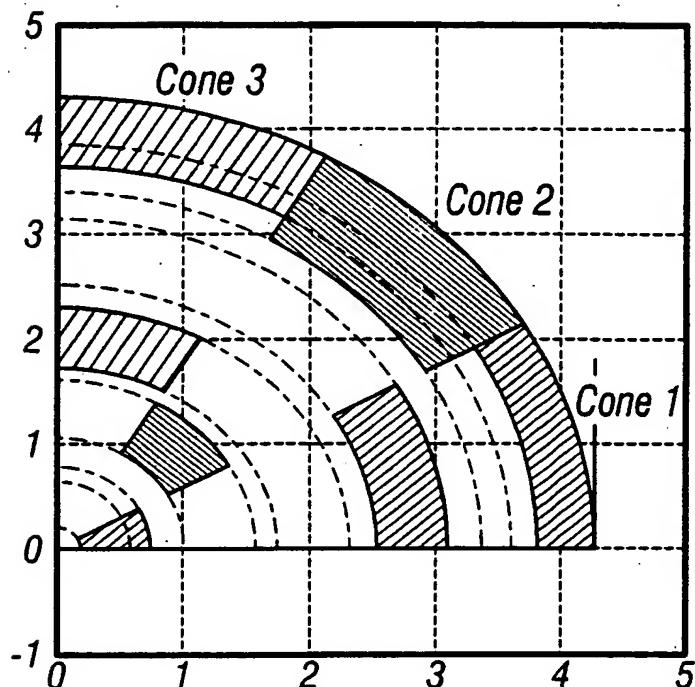


FIG. 4

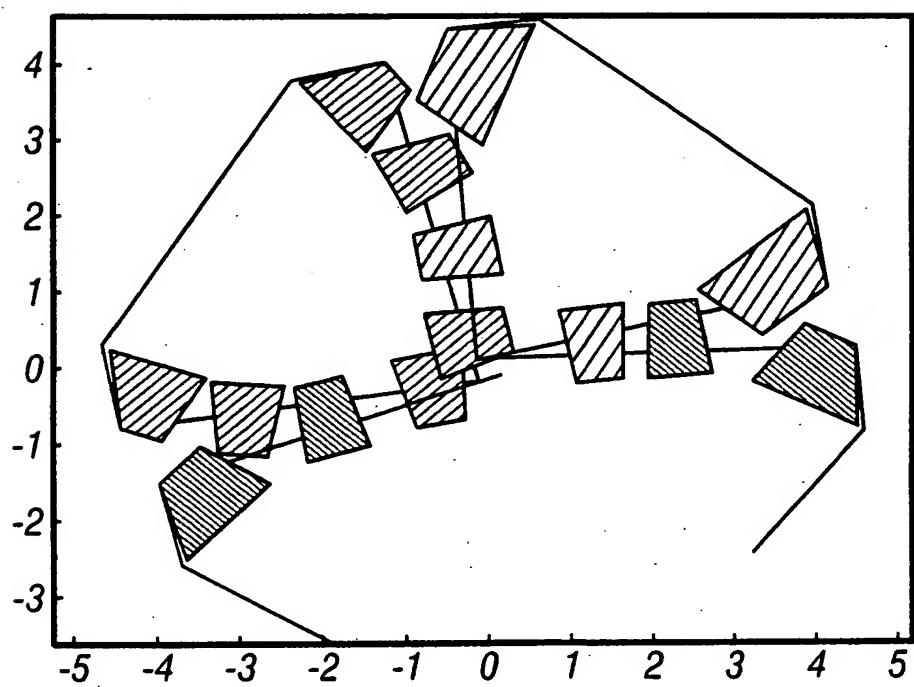


FIG. 5

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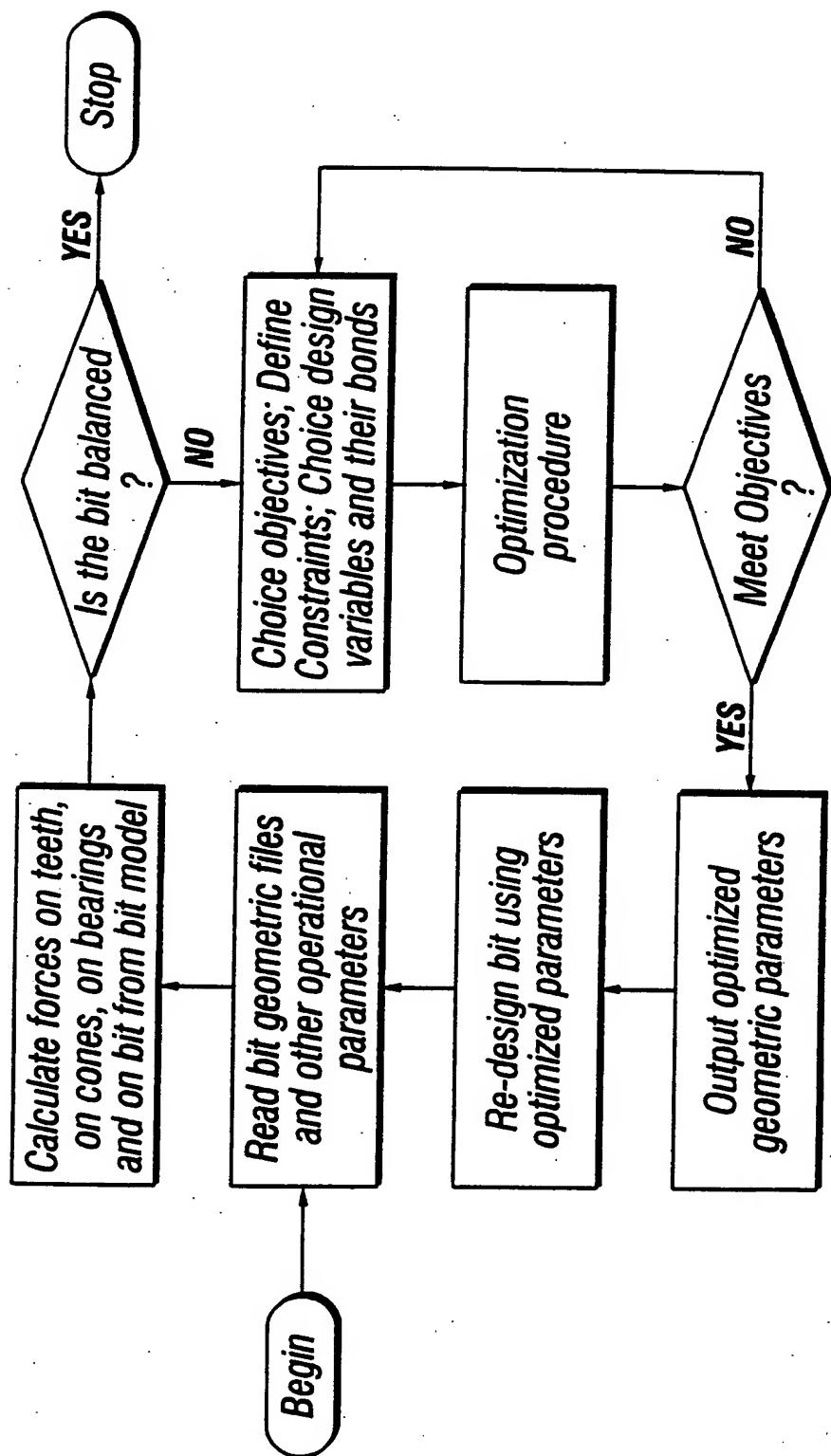


FIG. 6

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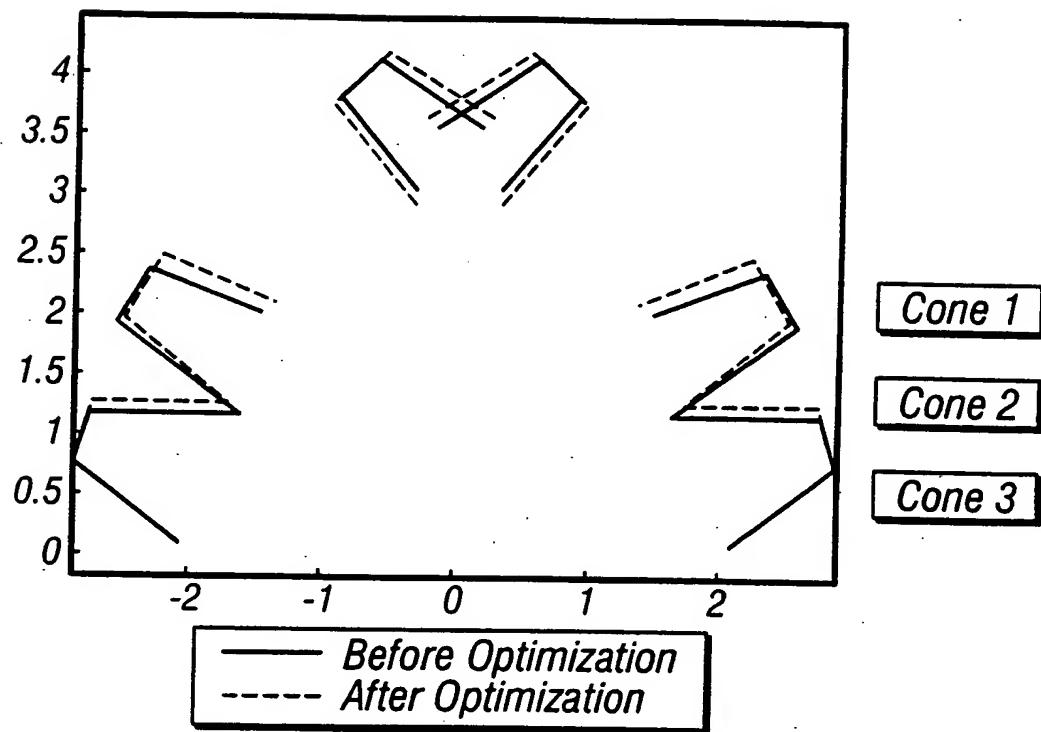


FIG. 7A

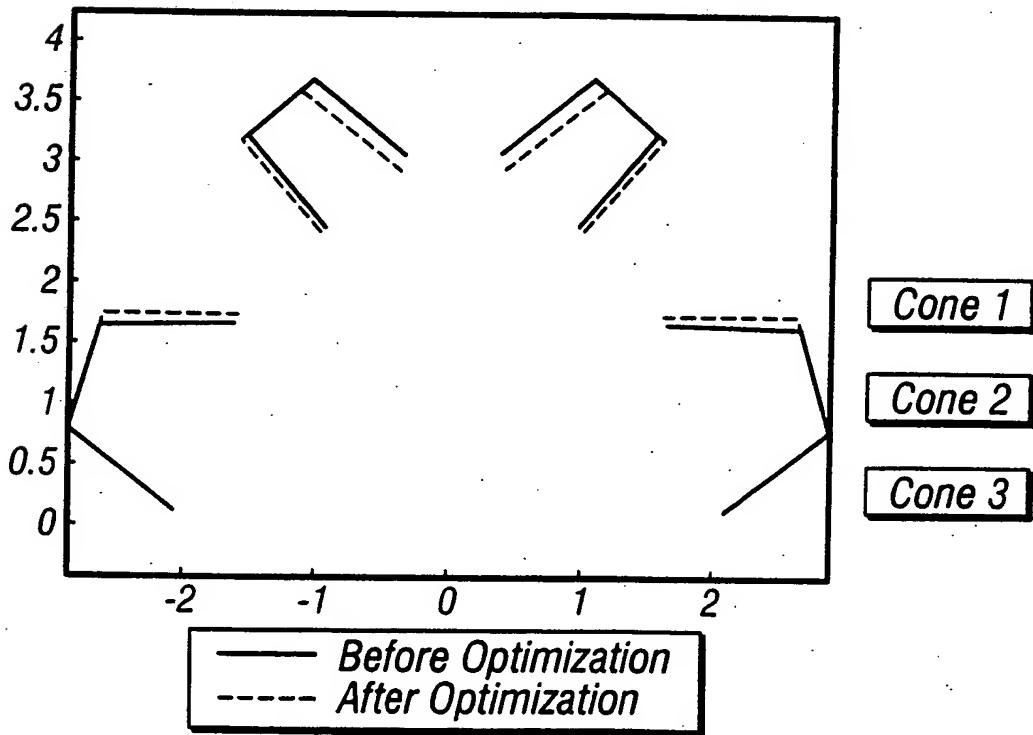


FIG. 7B

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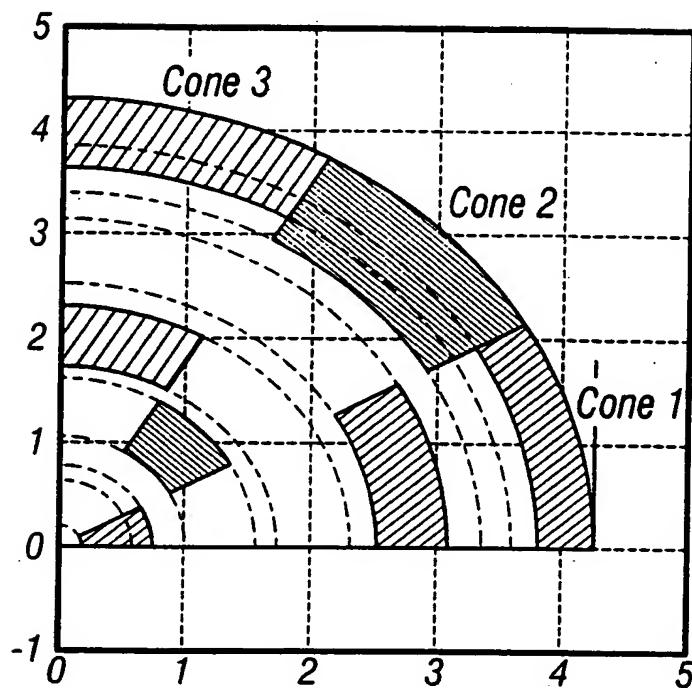


FIG. 8A

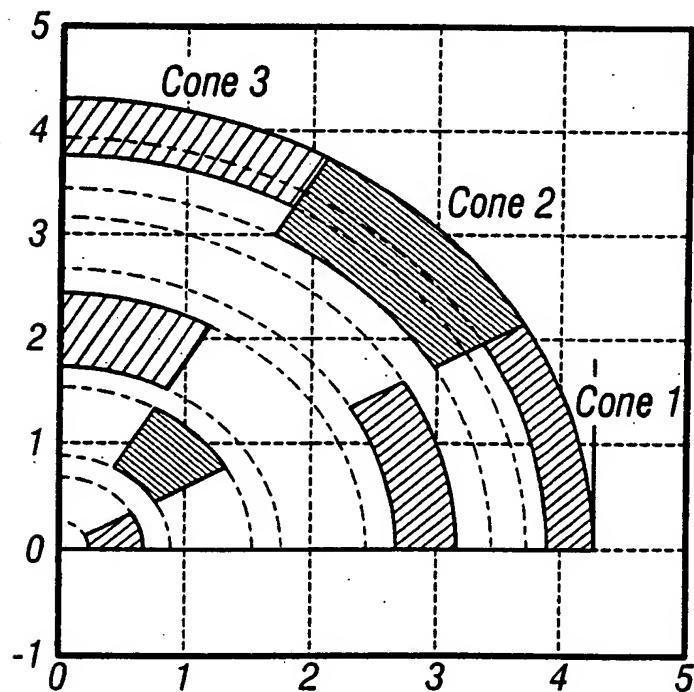
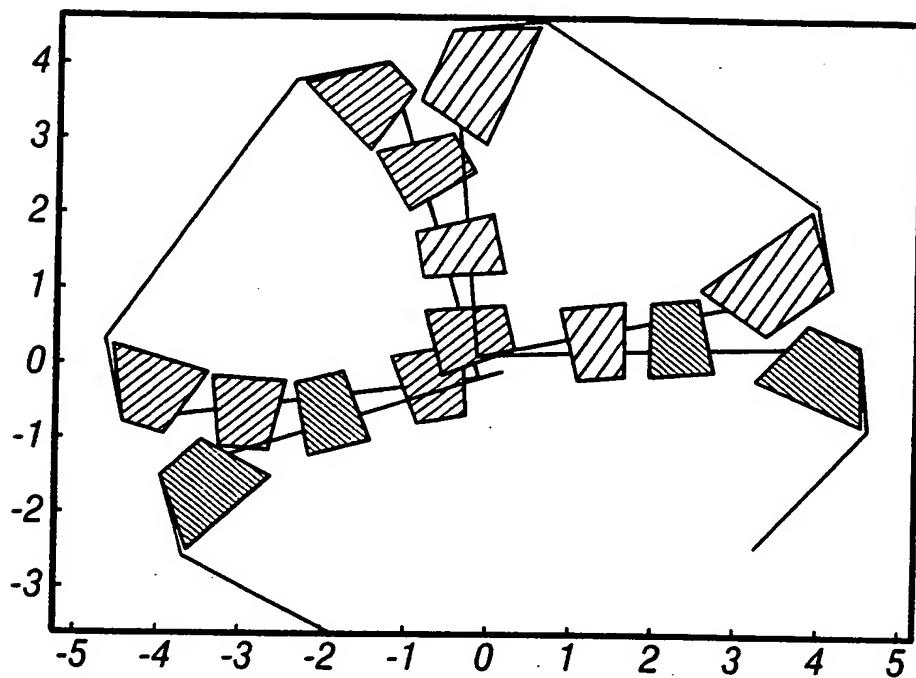


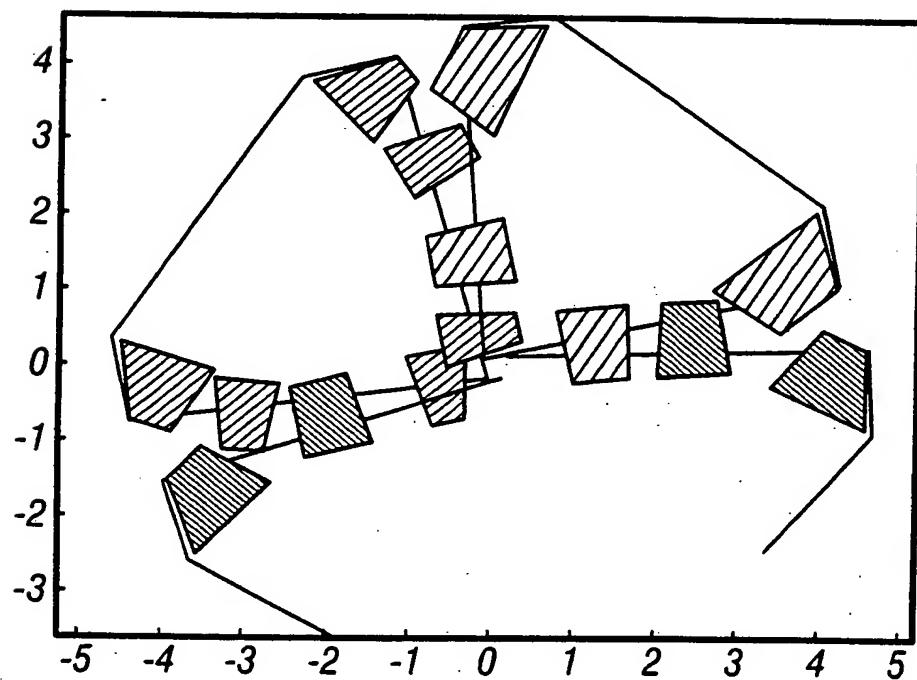
FIG. 8B

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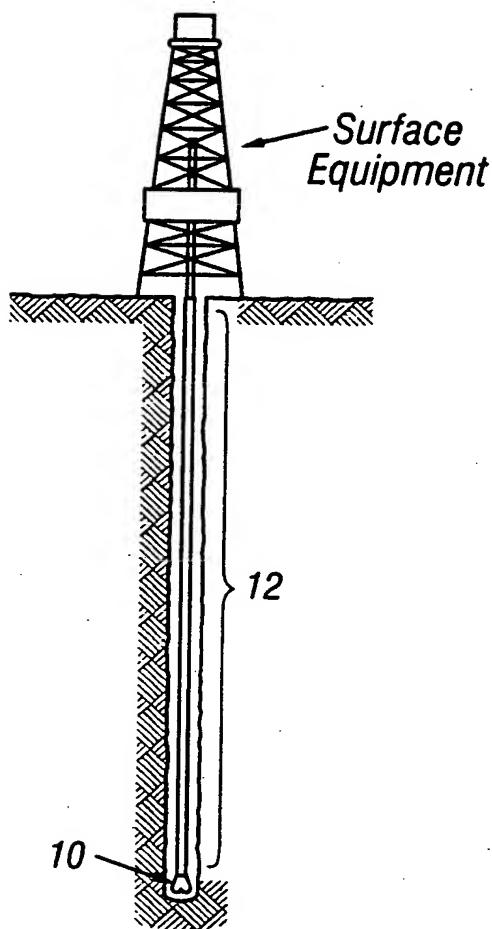
**FIG. 9A**



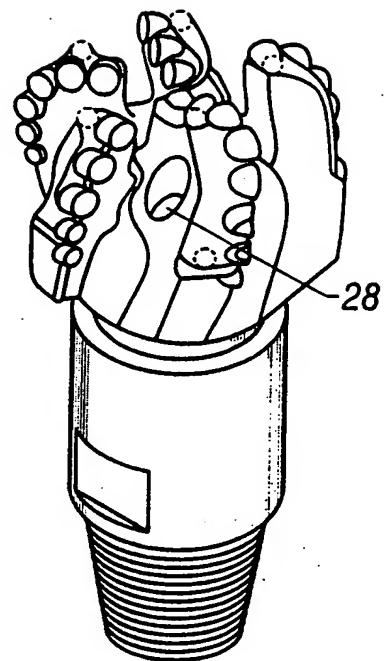
**FIG. 9B**

**FORCE-BALANCED ROLLER-CONE BITS,  
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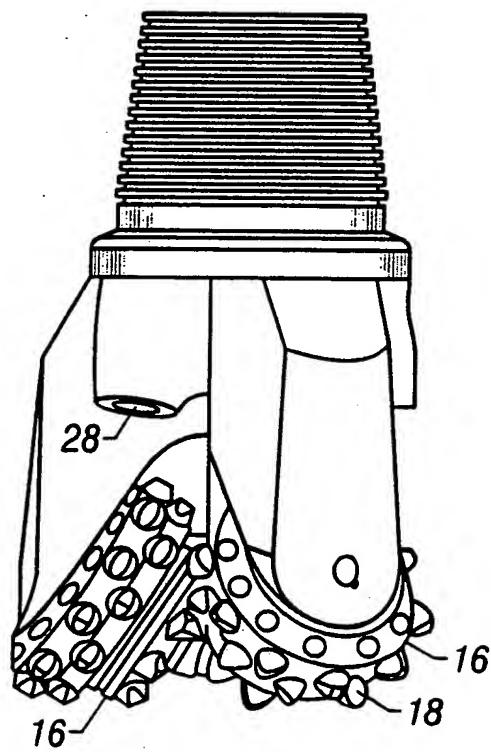
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**FIG. 10**



**FIG. 11**



**FIG. 12**